U.S. Department of Transportation

Federal Aviation Administration

Memorandum

Subject:	Action: Review and Concurrence, Equivalent Level of Safety Finding for Gulfstream Models GV-SP and GIV-X FAA Project Number Nos. AT5177AT-T and AT5080AT-T, respectively.	Date:	August 28, 2003
		Reg. Ref:	§§25.853 and 25.869
From:	Manager, Airframe & Cabin Safety, ANM-115	Reply to Attn of:	Joe Jacobsen, ANM-113
To:	Manager, Atlanta ACO, ACE-115 A	ELOS Memo #:	AT5177AT-T-A-9

Background
14 CFR Part 25.853 is applicable to materials installed in compartments occupied by crew or passengers, and prescribes the flammability requirements necessary to install those materials. The FAA considers that the electronic equipment racks (EERs), which effectively form the boundary between the flightdeck and the passenger cabin for the GV-SP and GIV-X, are located within the occupied compartments of the airplane, and would therefore require compliance with § 25.853. Only some of the materials internal to the racks on the GV-SP and GIV-X airplanes have been demonstrated to meet the flammability requirements of § 25.853.

Applicable regulation(s)
§§25.853 and 25.869

Regulation(s) requiring an ELOS
§25.853(a) at Amendment 25-83

Description of compensating design features or alternative standards which allow the granting of the ELOS (including design changes, limitations or equipment need for equivalency)
Considering the nature and location of the EERs on the GV-SP and GIV-X airplanes, the FAA has reviewed the installations and considers that an equivalent level of safety may be demonstrated, provided certain compensating features are provided. To demonstrate an equivalent level of safety, Gulfstream should show that all wiring in the EERs meets the requirements of § 25.869; that components not installed within small metal enclosures (for example, the Modular Avionics Unit) do comply with § 25.853; and that there are features such as indication of abnormal temperature conditions that will alert the crew in the event of a fire. Finally, it should be shown that the installations not directly covered by compliance with § 25.853 are equivalent to those installed within electronics compartments outside of the occupied areas.

Explanation of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation

The EERs are essentially an enclosure with various openings to permit entry of wiring and ducting. The outboard surface of the EERs is an epoxy-graphite composite, whereas the remainder of the enclosure is made of aluminum. The inboard panels are easily removable without special tools, providing accessibility in flight. Each rack has temperature sensors installed that would indicate to the crewmember while at his station the presence of an overheat condition. The enclosure contains possible sources of ignition (avionics and electrical wiring), but does not contain flammable fluids. The FAA finds that by meeting the requirements noted in the previous section of this memo, the design of the EERs installed on the GV-SP and GIV-X airplanes provides an equivalent level of safety to 14 CFR 25.853.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Finding for the GV-SP in Issue Paper A-9. As long as the EER installation on the GIV-X airplane meets the same requirements noted above, the Equivalent Level of Safety Finding in Issue Paper A-9 for the GV-SP is fully applicable to the GIV-X airplane. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section (TC's & ATC's) or on the STC Certificate. [e.g., Equivalent Safety Findings have been made for the following regulation(s): §§25.853 Compartment interiors (documented in TAD ELOS Memo No. AT5177AT-T-A-9)].

Original signed by Franklin Tiangsing — 7/21/04

Manager, Airframe &Cabin Safety, ANM-115 — Date

ELOS Originated by:	Program Managers:	Routing Symbol:
Atlanta ACO	Carla Wendler (GIV-X) & Neil Berryman (GV-SP)	ACE-115A